

ABSTRACT OF THE DISCLOSURE

An electric machine (40) has a stator (43), a permanent magnet rotor (38) with permanent magnets (39) and a magnetic coupling uncluttered rotor (46) for inducing a slip energy current in secondary coils (47). A dc flux can be produced in the uncluttered rotor when the secondary coils are fed with dc currents. The magnetic coupling uncluttered rotor (46) has magnetic brushes (A, B, C, D) which couple flux in through the rotor (46) to the secondary coils (47c, 47d) without inducing a current in the rotor (46) and without coupling a stator rotational energy component to the secondary coils (47c, 47d). The machine can be operated as a motor or a generator in multi-phase or single-phase embodiments and is applicable to the hybrid electric vehicle. A method of providing a slip energy controller is also disclosed.